**FINAL**

# Memphis Depot

# BRAC Cleanup Team

# Meeting Minutes

**April 20, 2005**

| BRAC Cleanup Team | Organization | Phone/email |
|---|---|---|
| Michael Dobbs | Defense Logistics Agency (DLA)/Defense Distribution Center (DDC-DES-IE) | 717.770.6950 |
| Turpin Ballard | Environmental Protection Agency, Region IV (EPA) | 404.562.8553 |
| James Morrison | Tennessee Department of Environment and Conservation, Division of Remediation (TDEC-DoR) | 615.532.0910 |
| **Project Team** | **Organization** | **Phone** |
| Evan Spann | TDEC-DoR | 901.368.7916 |
| Steve Youngs | MACTEC | 770.41.3400 |
| Tom Holmes | MACTEC | 770.421.3373 |
| Greg Wrenn | MACTEC | 770.421.3400 |
| Mirsada Ilic | MACTEC | 770.421.3400 |
| Bruce Railey | Corps of Engineers – Huntsville | 256.895.1463 |
| David Nelson | CH2M Hill | 770.604.9182 x394 |
| Mike Perlmutter | CH2M Hill | 770.604.9182 x645 |
| John K. Miller | Mitretek Systems | 703.610.2560 |

***Previous Meeting Minute Approval***

The BCT approved and signed the minutes from the March 24, 2005 meeting.

***Early Implementation of Selected Remedy (EISR) status***

Mr. Holmes distributed results from the March post-injection sampling event. He noted that there was no sample result for MW149 due to loss of the pump during the sampling event. The pump was recovered and a sample collected, but the result was delayed.

Mr. Holmes reported that the sampling results indicated that contaminant levels were rebounding, although they were still below the original levels. He indicated that the field team checked field measurements and results indicated reduced dissolved oxygen (DO) and oxidation-reduction potential (ORP) levels, which indicated the zero-valent iron (ZVI) was still having an impact. MACTEC will continue to monitor the area as part of the operations and maintenance (O&M) program.

Mr. Holmes indicated that CH2M Hill would consider this data in determining appropriate injection spacing for the ZVI portions of the Source Area and Off Depot Groundwater Remedial Designs (RDs). With the two tests of ZVI (the treatability study [TS] and the EISR), it appears that the spacing of injections should be tighter to achieve the desired results. Injections were spaced 30 feet apart for the TS and 60 feet apart for the EISR.

Mr. Ballard noted that the EISR technical memorandum mentioned injecting additional ZVI in this area during subsequent remedial actions and asked if that was still an option. Mr. Holmes indicated that the EISR area would be addressed by the Off Depot Groundwater RD. He indicated that the groundwater modeling and continued monitoring would provide important information as CH2M Hill developed the Off Depot Groundwater RD. Mr. Ballard asked about the modeling results. Mr. Holmes expected CH2M Hill to present final modeling results in June.

Mr. Nelson indicated that currently the Off Depot Groundwater RD called for injection spacing of 50 feet, but that CH2M Hill would reevaluate the spacing. Mr. Ballard asked about the iron to soil ratio, and Mr. Nelson confirmed that the goal was 0.5%.

Mr. Spann asked why sampling results did not indicate daughter products resulting from the breakdown of TCE. Mr. Ballard responded that the chemical reaction occurred very rapidly breaking the TCE down almost immediately to carbon dioxide. Mr. Miller noted that MW159 results indicated some daughter products.

Mr. Spann asked if the team had a good handle on the mass of iron needed. Mr. Nelson responded that they had a good handle on the mass of iron required to reduce contaminant levels, but that the problem appeared to be in the distribution of the iron.

Mr. Miller noted that no matter how much iron was injected, no reduction would occur if the iron did not come into contact with the contaminant. He noted the importance of injecting sufficient mass of iron into the contaminant flow path and taking into consideration the difficulty of dispersing the iron in a homogeneous pattern around the injection point into the aquifer. He also noted that the groundwater flowed slowly in this area, so it may be some time before the down gradient wells indicated contaminant reduction.

Mr. Morrison asked if it would be prudent to collect boring samples from around the injection points to determine ZVI distribution. Mr. Holmes indicated many borings would be necessary to determine ZVI distribution and money would be better spent on additional injections.

Mr. Ballard suggested comparing costs for placing the PRB along the valley of the plume to take advantage of the natural boundary versus almost doubling the number of ZVI injection points in the area west of Dunn Field.

Mr. Morrison asked if empirical observation was the only way to evaluate the ZVI that was injected to determine if it was still able to break down the contaminants. Mr. Holmes indicated the only other way would be to collect a sample of the iron to see if it had oxidized, but there was still the problem of finding the iron with borings.

Mr. Spann opined that the problem did not appear to be depleted iron as much as the contaminants were not contacting the iron and that perhaps more iron mass was necessary. Mr. Miller interjected that the iron mass was sufficient based on the TS, but that distribution of the mass within the aquifer was not uniform. Mr. Ballard agreed, and indicated that Dr. Ralph Ludwig had also observed that the ZVI process worked best with uniform distribution.

***Groundwater Interim Remedial Action (IRA) System Status***

Mr. Holmes reported that all the recovery wells pumps were working. MACTEC will replace some additional flow meters. MACTEC will produce a new map of wells to be sampled with the proposed sampling parameters and, upon BCT approval, prepare a sampling plan for implementation.

***Disposal Sites Remedial Action (RA) Status***

Mr. Greg Wrenn distributed the weekly status report to the team and provided the following status for each site:

Site 4.1 – Excavation has been completed and the site backfilled. Approximately 225 cubic yards of non-hazardous material were removed and disposed of at the BFI South Shelby Landfill. One wall sample of the nine confirmation samples collected from the excavation exceeded the Remedial Goal (RG) for copper (835 mg/kg) and lead (3,380 mg/kg). An additional confirmation sample collected following over-excavation did not exceed RGs. Approximately 35 cubic yards of material was over-excavated. The over-excavated material is currently stockpiled on site and will be characterized with any additional over-excavated material from other disposal sites.

Site 10 – Excavation has been completed in accordance with original planned extent. However, three confirmation samples had RG exceedances. Over-excavation and additional confirmation samples will be required. Stormwater accumulated in the excavation during rains in mid-April. Approximately 20,000 gallons were pumped to the frac tank, and approximately 10,000 gallons remain in the excavation. The water in the frac tank was sampled, and the results were provided to the City of Memphis. The City approved a one-time discharge to the sanitary sewer that has been completed. Approximately 245 cubic yards of stockpiled non-hazardous material was disposed of at the BFI South Shelby Landfill. Approximately 190 cubic yards of material in roll-off containers has been disposed of as non-hazardous based on the first characterization sample. Seventeen additional roll-off containers containing an estimated total of 175 cubic yards of materials are awaiting the results of the second characterization sample for disposal.

Site 13 – Excavation has been completed and backfilled. Approximately 55 cubic yards of material were disposed of as non-hazardous waste at the BFI South Shelby Landfill.

Site 31 – Excavation has been completed and 16 confirmation samples collected. Approximately 1,175 cubic yards of non-hazardous material have been disposed of at the BFI South Shelby Landfill. Results from 8 confirmation samples are still pending prior to backfilling the excavation.

Site 3 – Work has been suspended while additional evaluation of the materials present and proper handling and disposal procedures is conducted. Three of the 1-liter amber glass containers that were encountered during excavation were submitted to the laboratory for analyses, and the presence of 3,3-dimethylbenzidine (also known as ortho-tolidine) was confirmed.

Mr. Miller asked if there was a set distance for over-excavation. Mr. Wrenn responded that the field team would usually go about half way between sample locations. Mr. Holmes said that for Site 4.1 the confirmation sample was collected from a burn pit, so the field team visually identified the extent of the pit as it was being removed.

Mr. Wrenn reported that for Site 3 MACTEC was preparing the scope of work on how to handle the material relative to the proper health and safety requirements. He indicated MACTEC was

evaluating the prospect of erecting a berm or screen around the work area during excavation. Mr. Dobbs interjected that the idea of a screen went back to the Chemical Warfare Materiel (CWM) Removal Action, but that the team would provide information to the community regarding the situation and notify them of changes in the work area such as a screen.

Mr. Miller asked what aspect of the chemical was making MACTEC look at supplied air. Mr. Holmes reported that the ortho-tolidine exposure pathways were respiratory and through the skin. He continued that although the chemical was not very volatile, the respiratory pathways must be protected. Mr. Holmes indicated that MACTEC was still working to determine whether supplied air or cartridges were the most effective to complete, yet provided the appropriate protection.

Mr. Holmes reported that another aspect of the issue was if any other substances were buried in the pit in order to would determine whether the site should be removed by hand or by machinery. He indicated that there was not much information on the site except its name, "Mixed Chemical Burial" and "Ortho-tolidine." MACEC is concerned about the mixed chemical potential of the site, and are reviewing alternatives.

Mr. Miller asked if the bottles were loose or in crates. Mr. Holmes reported the bottles may have been in crates that have deteriorated. He said that MACTEC had most of the information together and was developing a plan that would be distributed to the BCT. Mr. Dobbs asked how long before the field team would begin work. Mr. Wrenn indicated that the plan must be reviewed and approved by MACTEC's senior certified industrial hygienist, and he was not sure how long that would take.

Mr. Morrison mentioned his past experiences indicated that if the field team must be in Level A personal protective equipment, then the community would want to know how long it would take. Mr. Wrenn replied that if the plan was to excavate the site with machinery, it would only take one day.

Mr. Holmes requested input from the team regarding analysis of confirmation samples from over-excavations. When the field team collected samples from the over-excavation of Site 4.1, the samples were analyzed for all SVOCs and metals, just like a new confirmation sample. The laboratory did not analyze just for the constituents that exceeded the remedial goals. Mr. Holmes requested that in the future MACTEC would prefer to analyze confirmation samples from over-excavations for only the constituents that exceeded the remedial goals. Mr. Ballard agreed as long as the characteristic of the over-excavation did not change. He indicated that if there was a visual or observational change to the characteristics of the over-excavation, then no.

Mr. Evan Spann reported that he had reviewed the Disposal Sites Pre-Design Investigation Work Plan and the Pre-Design Investigation Technical Memorandum and thought there may have been a discrepancy in the description for Disposal Sites 7 and 8 because at some point the descriptions of the two sites were reversed. He wanted to ensure these sites had been investigated. Mr. Spann indicated both Sites 7 and 8 were classified as "medium" sites in the Pre-Design Investigation Work Plan. Mr. Holmes replied that both sites were investigated during the Pre-Design Investigation.

Mr. Spann also questioned why the Pre-Design Investigation trenches were shifted on 4.1, especially since the description of Site 4 indicated 13 drums of buried material. He wondered if drums could still be located at Site 4. Mr. Holmes responded that the Pre-Design Investigation trench locations were based on geophysical investigations that targeted drums. If the geophysical investigation did not indicate drums in the original pit location, then it was not likely that the

drums were missed. He pointed out that the trench was moved to where the geophysical investigation indicated.

Mr. Spann requested confirmation on what work occurred to eliminate Site 21 from consideration for remediation as the Pre-Design Investigation Work Plan mentioned Site 21 was previously covered by storage piles and possibly contained ordnance or explosives. Mr. Nelson replied that Site 21 was a burn pit and that documentation indicated the contents were later removed to Site 19. During the Dunn Field Remedial Investigation, CH2M Hill collected soil borings from Site 19, and results did not indicate the presence of smoke pots or souvenir ordnance.

Mr. Spann reminded the team that the discussion at the last meeting raised the question of whether the Pre-Design Investigation could have missed disposal locations that should be removed. Mr. Ballard responded that the team looked for the disturbed ground indicators before the Pre-Design Investigation actually began trenching. He said that the team used their best judgment to target areas with indications of buried material. Mr. Holmes asked Mr. Spann if he felt anything additional was required based on his review. Mr. Spann replied, no. Mr. Dobbs indicated the team was confident that the remedial action would remove what was necessary based on the results of the Pre-Design Investigation trenching and the geophysical investigations.

***Dunn Field Transfer***

Mr. Dobbs informed the BCT that last week he and Mr. Holmes had met with representatives of the DLA BRAC office and of the Corps of Engineers Real Estate office, who had met with representatives of the City of Memphis. The Corps representatives presented a map showing the City's plans for Dunn Field that included the entire northern area, including the Disposal Area, for a public park. He and Mr. Holmes were very surprised to see the park area, because neither had seen it before.

Mr. Ballard responded that the Finding of Suitability to Transfer (FOST) or other documentation should state that "to the best of our knowledge and understanding we have abated all unacceptable risks at the site" and that the property transfer law provides the "however, if you find something, the government will come back." He reiterated that the Remedial Action Completion Report must clearly show all the disposal site locations including the level "C" locations and must document what was reported to be in them.

Mr. Nelson interjected that was the reason for all the background information in the RD, because that information will be carried forward in the land use restrictions. When something is excavated, the City can review the documents to see what was supposedly there. Mr. Nelson indicated that during installation of the SVE TS CH2M Hill unearthed glass and other debris, but the area was not identified as a disposal location proving that buried debris will be unearthed during construction activities in that area. Mr. Ballard reminded the team that the Depot used the Disposal Sites area for bulldozer practice that disturbed the area and probably scattered debris.

Mr. Dobbs replied that was why everything must be documented in the land use restrictions. He indicated there was already a notice specific to CWM. Mr. Spann asked why not include a dig restriction in the land use restrictions. Mr. Ballard indicated there was no risk basis for a "no dig" restriction. He continued that the disposal sites could have been capped, but the team decided to investigate the sites that potentially posed an unacceptable risk and to remove those sites that presented an unacceptable risk for non-residential reuse.

According to Mr. Dobbs, the Depot Redevelopment Corporation's reuse plan only identified the parkland area on the eastern side of Dunn Field as future city park land. Now the Corps indicates that the City passed a resolution to use the entire north end of Dunn Field as a public park. Mr. Ballard indicated that the area was not restricted from recreational reuse.

Mr. Spann voiced concern that by not removing material from all the disposal sites, the team was leaving things that future property owners would have to dispose. Mr. Ballard indicated that if the sites did not pose an unacceptable risk, there was no basis for a CERCLA action.

Mr. Dobbs told the DLA BRAC and COE representatives that the area was being cleaned up to industrial standards, but offered to check the risk assessment for recreational reuse. He asked Mr. Nelson to evaluate the risk. If it does not present an unacceptable risk, then they can use it for a park. If it does present an unacceptable risk, then they can not use it as a park unless they want to pay for the additional cleanup.

Mr. Ballard mentioned the fact that the risk assessment must include post-remediation sample results, including post soil vapor extraction. Mr. Holmes responded that CH2M Hill could look at the historical soil data and then take into consideration the current situation assuming remediation has met the remedial action objectives. This approach would provide a good indication of whether the area could be used for a park.

The team discussed various risk assumptions that could be applied to the area. Mr. Dobbs tasked Mr. Nelson to continue with the risk assessment based on available data and then perform an assessment based on post-remediation data. He asked the team to try and provide the City what they wanted, without going through a whole lot of remediation.

Mr. Ballard indicated he needed to review the Dunn Field ROD, but thought the only restrictions were for no residential and no day-care reuse. And he reiterated that to confirm that the area posed no unacceptable risk for recreational reuse, the team must use post-remediation data. He also suggested a 6 to12-inch soil cap to deal with any residual risk. Mr. Dobbs voiced approval for the idea if it would help provide the City with the entire area for a public park. Mr. Ballard suggested presenting this information to the RAB and to inform them that the BCT was still evaluating the area to determine if it would be acceptable as a park.

***Main Installation Remedial Action Work Plan***

The team discussed comment responses to EPA's MI RAWP comments.

Regarding the operating properly and successfully (OPS) determination, Mr. Ballard reported that he discussed the issue with EPA's Federal Facilities Restoration and Reuse Office, which wrote the OPS guidance. He had pointed out the potential conflict between their OPS guidance and the EPA CERCLA site closeout guidance relative to the definition of OPS and requirements to achieve OPS. The Federal Facilities Office responded since OPS at the Memphis Depot was a federal facilities specific issue and the Federal Facilities Office wrote the guidance, then the Federal Facilities Office's guidance takes precedence over the CERCLA site closeout guidance with respect to the definition and requirements for OPS.

Mr. Holmes reviewed several of EPA comments relative to OPS to ensure the responses were appropriate and to ensure the team agreed on the sampling necessary to achieve OPS.

### S*ource Area Remedial Design*

Mr. Nelson reported that CH2M Hill would post the Intermediate (60%) Source Area Remedial Design on its server for internal review on April 25. The document was scheduled for distribution to EPA and TDEC on June 6.

Mr. Mike Perlmutter then provided information contained in the Intermediate RD. The injection point spacing was reduced from 60 feet to 50 feet, but based on the EISR results discussed earlier in the meeting, the team may want to reevaluate that spacing and reduce it even more.

Based on an EPA comment, the Intermediate RD included additional ZVI injections in various locations, especially near RW7. The document would include the rationale for the additional injection areas. Mr. Perlmutter also presented the rationale for removing several areas from the ZVI treatment areas. He indicated the Intermediate RD included 10 new monitoring wells necessary to better delineate the plume.

He presented the updated SVE system layout and noted that Intermediate RD included two vapor collection systems as opposed to the one collection system in the Preliminary RD due to the size of the area and to increase the efficiency of the system theoretically allowing the system to achieve the remedial goals more quickly.

Mr. Perlmutter then described some other changes in the SVE system from the Preliminary RD such as situating the vapor collection piping system under the liner to reduce the number of holes through the liner. He described other changes relative to injection pressure for fracturing and injection point screen lengths.

Mr. Ballard asked if the loess modeling indicated any vertical fracturing. Mr. Perlmutter said that the modeling did indicate vertical modeling, both upward and downward. Mr. Holmes asked if there would be any way to determine how much injection flow was being captured by the extraction points and if that was something that should be measured. Mr. Perlmutter responded that the system would inject at a certain flow rate and would be able to determine the air volume at the surface within a certain percentage, but he also pointed out that the system should also pull in some atmospheric flow. And, yes, the extraction flow should be measured.

Mr. Morrison about fluctuating pumping between the loess and fluvial, sometimes pump just the loess and sometime just the fluvial, in order to avoid creating a closed system where the injected air was immediately captured without reaching out into the formation to grab the contaminants. Mr. Perlmutter responded that CH2M Hill modeled the system for just the loess and there was a small amount of flow down into the fluvial extraction area. As designed, the system would operate all three extraction systems at the same time – the top gravel, the loess and the fluvial and would cycle through the three treatment areas. The model indicated the system would work vertically and horizontally.

Mr. Ballard asked if the system would collect condensate when the system cycled off as it would contain contaminants. Mr. Perlmutter indicated that because the volume of condensate would not be significant, the system was not designed to capture the condensate. Mr. Perlmutter described the treatment zones, the system cycles, and the number, location of injection and extraction points, collection system compounds, and system sampling locations.

### *Off-Depot Groundwater Remedial Design*

Mr. Nelson reported that the design was being prepared. CH2M Hill has completed the MODFLOW and MODPATH groundwater modeling analysis and we are reviewing the report.

CH2M Hill has started the RT3D model and will present the all the modeling results to the BCT in June.

Regarding the PRB portion of the design, Mr. Nelson indicated that he had spoken with GeoSierra about participating in the RD process because they will not participate in construction if they have not participated in the design. He asked GeoSierra for a cost estimate to participate in the design process. The cost estimate was as much as CH2M Hill's cost for producing the entire remedial design. Mr. Nelson contacted some other vendors about whether they could construct walls with zero-valent iron. He presented information from these other vendors about their processes, their experience, and their cost estimates.

Mr. Ballard indicated that the ROD does not prescribe a particular contractor, but it does state that the performance standards are to be met by the remediation. Whatever is constructed must meet the cleanup levels. Mr. Ballard continued that the regulators cannot dictate the use of a particular company. The regulators' responsibility is to review the treatment technology and the design. The remediation construction must be based on the design, and the construction must meet the performance standards contained in the design. Selection of the construction contractor must go through the normal contracting process.

Mr. Dobbs agreed that the regulators role was to approve the technology and the design, but it was up to the remedial design and remedial action contractors to produce a performance based design and to implement the design.

Mr. Nelson suggested conducting an implementation study to ensure that these other vendors can meet the performance standards. Mr. Ballard voiced concern about the types of equipment used by the other vendors being able to get into the areas identified for treatment because of the power lines. Mr. Nelson had described the field conditions to the other vendors and they had provided alternatives for getting into the area.

"Mr. Ballard did not have a problem with using another PRB construction method, but reminded the team that the PRB must be effective in treating the groundwater to meet the cleanup goals. He suggested that the design be a performance based design and that there are quality control standards such as a uniform wall or distribution thickness and residence time."

Mr. Miller provided suggestions for confirming the performance standards if the team conducted an implementation study. Mr. Nelson presented the area and size of PRB being considered for an implementation study. The team discussed the standards, the other vendors' processes for constructing the wall and if their processes could meet the standards.

The team agreed to conduct an implementation study using the other vendors' processes to ensure the wall would meet performance standards before writing a design based on performance standards. Mr. Nelson will provide the COE with a cost proposal and will contact the other vendors to assess their interest in performing and bidding on an implementation study. He indicated that from his previous conversations, the other vendors are interested. Mr. Dobbs instructed Mr. Nelson to move forward. Mr. Dobbs also reminded the team that while he wants to ensure the technologies will work, he also does not want technical studies to negatively impact the schedule. Mr. Nelson felt the team was early enough in the process that an implementation study would not delay the design.

Mr. Ballard asked if ZVI injections were still planned for the area down gradient of MW144. Mr. Dobbs said the team was still looking at that situation based on the EISR results.

***Community Involvement***

Mr. Ballard announced that Ms. Tiki Whitfield was no longer with EPA and that he could bring someone into the process on an "as needed" basis. Mr. Holmes reminded that team of the RAB meeting scheduled for May 19. Mr. Holmes indicated that the MI RD public briefing was tentatively scheduled for in June, but that it would probably be rescheduled. Mr. Holmes indicated that a risk communication refresher was scheduled for September 14 in Memphis, TN.

***Upgradient Dunn Field Groundwater Plume***

Mr. Spann reported that EPA had tasked Weston Solutions to perform the Wabash Avenue investigation. Weston scheduled a site visit for the first part of June to identify monitoring well locations. Mr. Dobbs requested that Mr. Spann provide MACTEC with the information regarding the activities in case they received any community inquiries.

***Schedule***

Mr. Holmes presented the deliverables schedule and discussed status of the upcoming and past due documents as well as the upcoming field activities. Mr. Ballard requested the latest validated data from the EISR.

***Defense State Memorandum of Agreement (DSMOA)***

Mr. Holmes reported that MACTEC had provided the DSMOA information requested by Mr. Morrison. Mr. Dobbs indicated that he had approved the funding package and that funds should be disbursed to the State soon.

***Next Meeting***

The next meeting will be held at the Memphis Depot Business Park in Memphis, TN on May 19. Mr. Morrison will contact Henry Horton State Park regarding availability for June 15 and 16.

SIGNED 5/19/05
MICHAEL DOBBS DATE
Defense Distribution Center
BRAC Environmental Coordinator
BRAC Cleanup Team Member

SIGNED 5/19/05
TURPIN BALLARD DATE
Environmental Protection Agency
Federal Facilities Branch
Remedial Project Manager
BRAC Cleanup Team Member

SIGNED 5/19/05
JAMES MORRISON DATE
Tennessee Department of Environment and Conservation
Memphis Field Office
Division of Superfund
BRAC Cleanup Team Member